

# RAIL ASSEMBLY FOR FURNITURE

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention relates to a rail assembly for furniture containing drawers, and more particularly to a rail assembly that can prolong a useful life.

### 2. Description of Related Art

To make a drawer close automatically, manufacturers often include a spring in a rail assembly for a drawer. However, a conventional rail assembly often has a complex structure, and the cost of the rail assembly is high. Furthermore, the conventional rail assembly only has one spring that easily breaks due to elastic fatigue.

To overcome the shortcomings, the present invention provides a rail assembly for furniture to mitigate or obviate the aforementioned problems.

## SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a rail assembly for furniture to prolong a useful life of the rail assembly. The rail assembly has a stationary track, an internal track, a sliding frame, a latch bracket and a resilient latch assembly. When the internal track and sliding frame are pushed in, the resilient latch assembly engages the sliding frame as the sliding frame releases the resilient latch assembly from an extended position. The latch bracket automatically pulls the resilient latch assembly and the attached sliding frame to a completely closed position.

Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in

1 conjunction with the accompanying drawings.

2 **BRIEF DESCRIPTION OF THE DRAWINGS**

3 Fig. 1 is a perspective view of a rail assembly for furniture in  
4 accordance with the present invention;

5 Fig. 2 is an exploded perspective view of the rail assembly for furniture  
6 in Fig. 1;

7 Fig. 3 is an enlarged side plan view in partial section of the rail  
8 assembly for furniture in Fig. 1;

9 Fig. 4 is an enlarged front plan view in partial section of the rail  
10 assembly along line 4-4 in Fig. 3;

11 Fig. 5 is an enlarged side plan view in partial section of the rail  
12 assembly for furniture in Fig. 1;

13 Fig. 6 is an enlarged top plan view in partial section of the rail  
14 assembly for furniture along line 6-6 in Fig. 4;

15 Fig. 7 is an enlarged operational top plan view in partial section of the  
16 rail assembly for furniture in Fig. 6; and

17 Fig. 8 is an enlarged side plan view in partial section of the rail  
18 assembly for furniture in Fig. 1.

19 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

20 With reference to Figs. 1 to 4, a rail assembly for furniture in according  
21 to the present invention has a stationary track (10), an internal track (14), a  
22 sliding frame (16), a latch bracket (20) and a resilient latch assembly (30).

23 The stationary track (10) is U-shaped and has an inner end (not  
24 numbered), an outer end (not numbered), a web (not numbered), two side edges

1 (not numbered) and two longitudinal guides (101). The web has an inner  
2 surface (not numbered), an outer surface (not numbered), two locking holes (11)  
3 and a mounting tab (12). The locking holes (11) are defined through the web  
4 near the inner end of the stationary track (10) and are aligned transversely with  
5 each other. The mounting tab (12) is formed on and extends perpendicular from  
6 the inner surface of the web at a distance from the locking holes (11) toward  
7 the outer end of the stationary track (10). The longitudinal guides (101) are  
8 defined respectively at the side edges.

9 The internal track (14) is mounted moveably inside the stationary track  
10 (10) and is conventional so further description of the features and operation is  
11 not included.

12 The sliding frame (16) is mounted slidable inside the internal track (14)  
13 in a conventional manner so further discussion of the features associated with  
14 mounting the sliding frame (16) inside the internal track (14) is not included.

15 The sliding frame (16) has an inner end (not numbered), an outer end (not  
16 numbered), a web (not numbered), two protrusions (162) and a latch tab (161).

17 The web has an inner surface (not numbered) and an outer surface (not  
18 numbered). The inner surface of the web faces the inner surface of the  
19 stationary track (10) web. The protrusions (162) are formed on and protrude  
20 from the inner surface of the web near the inner end of the sliding frame (16).

21 The latch tab (161) is also formed on and protrudes from the inner surface of  
22 the web a distance from the protrusions (162) toward the outer end of the  
23 sliding frame (16).

24 The latch bracket (20) is mounted securely at the inner end of the

1 stationary track (10) on the inner surface of the web and has an inner end (not  
2 numbered), an outer end (21), a body (23), two keys (25), an upper rail (22), a  
3 lower rail (221) and a buffer (29). The body (23) has an outer end surface (not  
4 numbered), a rear surface (not numbered), a cavity (231), a through hole (26), a  
5 top side (not numbered), a bottom side (not numbered) and two locking  
6 protrusions (27). The cavity (231) is defined in the rear surface of the body (23),  
7 the through hole (26) is defined in the outer end surface and communicates  
8 with the cavity (231). Each locking protrusion (27) is respectively formed on  
9 the rear surface of the body (23) besides the cavity (231).

10 The keys (25) are integrally formed respectively on the top side and the  
11 bottom side of the body (23) and are mounted respectively inside the  
12 longitudinal guides (101) of the stationary track (10). Each key (25) has a rear  
13 surface (not numbered) and a spring holder (251). The spring holders (251) are  
14 recessed and communicate with the cavity (231) in the body (23).

15 The outer end (21) is a reversed B-shape and has a transverse mounting  
16 slot (211). The upper rail (22) and the lower rail (221) are formed integrally  
17 with the body (23), extend from the outer end surface parallel to each other,  
18 and respectively have longitudinal guide slots (24). Each longitudinal guide  
19 slot (24) has an inner end (not numbered), a transverse stop notch (241) and an  
20 outer end (not numbered). The inner end is J-shaped and has a tongue (242).  
21 The transverse stop notches (241) are formed near the outer ends of the  
22 longitudinal guide slot (24) and are aligned with each other.

23 The latch bracket (20) is attached to the inner surface of the web of the  
24 stationary track (10) by mounting the locking protrusions (27) respectively

1 inside the locking holes (11) and the mounting slot (211) on the mounting tab  
2 (12).

3 The buffer (29) is mounted inside the cavity (231) in the body (23) to  
4 absorb energy when a drawer closes and has a buffer spring (291) and a tube  
5 (292). The tube (292) has an open end (not numbered), a closed end (not  
6 numbered) and two wings (293). The wings (293) are formed on and extend out  
7 radially from the open end of the tube (292). The closed end of the tube (292)  
8 extends out of the through hole (26) in the body (23), and the wings (293) abut  
9 the cavity (231) in the body (23). The buffer spring (291) is mounted inside the  
10 open end of the tube (292) between the cavity (231) and the tube (292) and  
11 holds the tube (292) in the through hole (26).

12 The resilient latch assembly (30) is slidable mounted inside the latch  
13 bracket (20) and has a latch (31) and two springs (37). The latch (31) is slidable  
14 mounted between the upper rail (22) and the lower rail (221) and has an outer  
15 end (not numbered), an inner end (not numbered), a front surface (not  
16 numbered), a rear surface (not numbered), a top side (not numbered), a bottom  
17 side (not numbered), a middle portion (not numbered), two guide posts (33),  
18 two locking posts (331), a spring bracket (35) and a hook (32). The guide posts  
19 (33) are formed respectively on the top side and the bottom side at the middle  
20 portion, and the locking posts (331) are formed respectively on the same sides  
21 as the guide posts (33) near the inner end. The posts (33, 331) are slidably  
22 mounted respectively inside the longitudinal guide slots (24), and the locking  
23 posts (331) are selectively held respectively inside the transverse stop notches  
24 (241) to hold the latch (31) at the outer end (21) of the latch bracket (20). The

1 spring bracket (35) is formed on the rear surface of the latch (31) at the middle  
2 portion and has two notches (351). The hook (32) is formed on and extends out  
3 from the front surface of the latch (31) at the outer end.

4 The springs (37) are mounted between the latch (31) and the body (23).  
5 Each spring (37) has two ends (371) and two necks (372) that are respectively  
6 near the ends (371). One end (371) of each spring (37) is mounted in the  
7 corresponding spring holder (251) on the wing (25), and the other end (371) is  
8 mounted in the corresponding notch (351) in the spring bracket (35) by  
9 mounting the necks (371) respectively in the notches (351) and the spring  
10 holders (251).

11 With reference to Figs. 5 to 8, the locking posts (331) move into the  
12 transverse stop notches (241) of the upper rail (22) and the lower rail (221)  
13 when a drawer (not shown) with the rail assembly in accordance with the  
14 present invention is opened. When the locking posts (331) move into the  
15 transverse stop notches (241), the resilient latch assembly (30) will pivot  
16 causing the hook (32) to release the latch tab (161) and allow the sliding frame  
17 (16) to be pulled out.

18 When the sliding frame (16) is pushed in, the protrusions (162) press  
19 against the inner end of the latch (31) and push the locking posts (331) out of  
20 the transverse stop notches (24) and cause the hook (32) to engage the latch tab  
21 (161). Because of the elastic force in the springs (37), the latch (31) will be  
22 pulled against the body (23). The latch (31) will abut the protruding end of the  
23 tube (292) and compress the buffer spring (291) in the buffer (29) to slow the  
24 sliding frame (16) as it approaches the body (23). The springs (37) securely

1 hold the latch (31) and the sliding frame (16) against the body (23) until the  
2 sliding frame (16) is pulled out to release the latch (31) as previously described.

3 The rail assembly for furniture in accordance with the present  
4 invention has the following advantages:

5 1. Two springs (37) mounted between the latch bracket (20) and the  
6 resilient latch assembly (30) provide a more consistent elastic force over time  
7 and last longer than a single spring.

8 2. The latch tab (161) and the protrusions (162) are defined directly on  
9 the sliding frame (16) so other elements are not required to hold the resilient  
10 latch assembly (30) in place, which simplified the structure and lowers the cost  
11 to produce the rail assembly.

12 Even though numerous characteristics and advantages of the present  
13 invention have been set forth in the foregoing description, together with details  
14 of the structure and function of the invention, that the disclosure is illustrative  
15 only, and changes may be made in detail, especially in matters of shape, size,  
16 and arrangement of parts within the principles of the invention to the full extent  
17 indicated by the broad general meaning of the terms in which the appended  
18 claims are expressed is to be understood.